



**The New CSP-30
is the world's first**



and only wow!
100-Nanosecond
blow your mind
3-Million-
Instructions-Per-Second
incredible
Digital Computer.

It sells for around
\$100,000.

Alas, the best
things in life are
not entirely free.

THE ULTIMATE FANTASY MACHINE

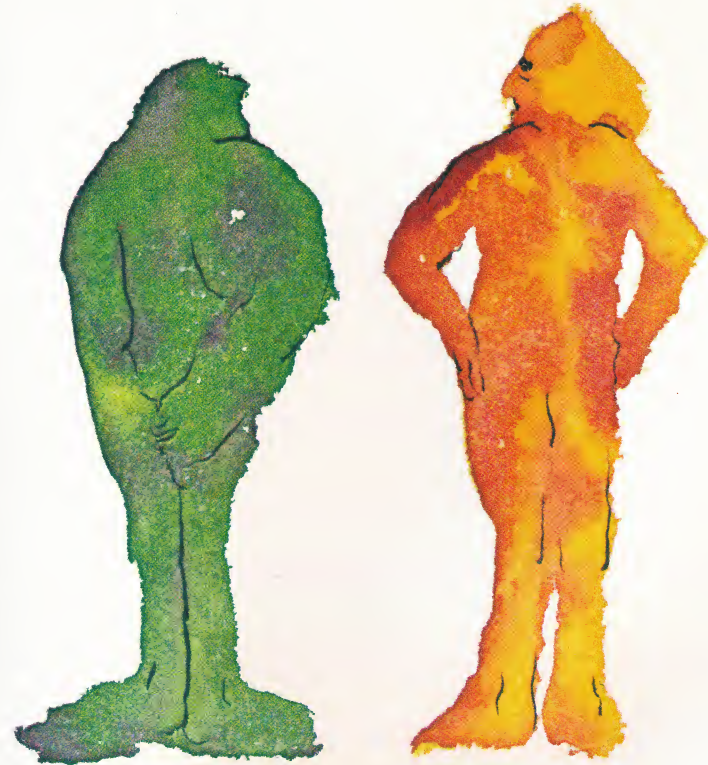
All right! So here comes another computer (yawn).

But wait! Did someone say for signal processing?
Faster than a speeding bullet? More powerful than...?

It's true. Computer Signal Processors, Inc. has built a digital computer, operating at 3 million instructions per second, with a basic cycle time of 100 nanoseconds, **Right on!**

The base price is \$85,000. But yours will probably be around \$100,000 *give or take a few thou* depending on the bells and whistles needed to do your particular thing.

For want of a better name, we're calling our fantasy machine **CSP-30**. Once it's yours, of course, you can call it anything you want. **But Edmund?**



FASTER THAN

A constant tachycardiac fibrillation of high-resolution FFTs coming at you *en* speed 100-nano-second speed freaking *masse!* Not ordinary. No. **But today!**

Which means the **CSP-30** can handle continuous real-time Fast Fourier Transforms (the name of the game ... perfect!) at bandwidths up to a real 45 kHz. With 20 MHz (8-bit words) block sampling.





MORE POWERFUL THAN

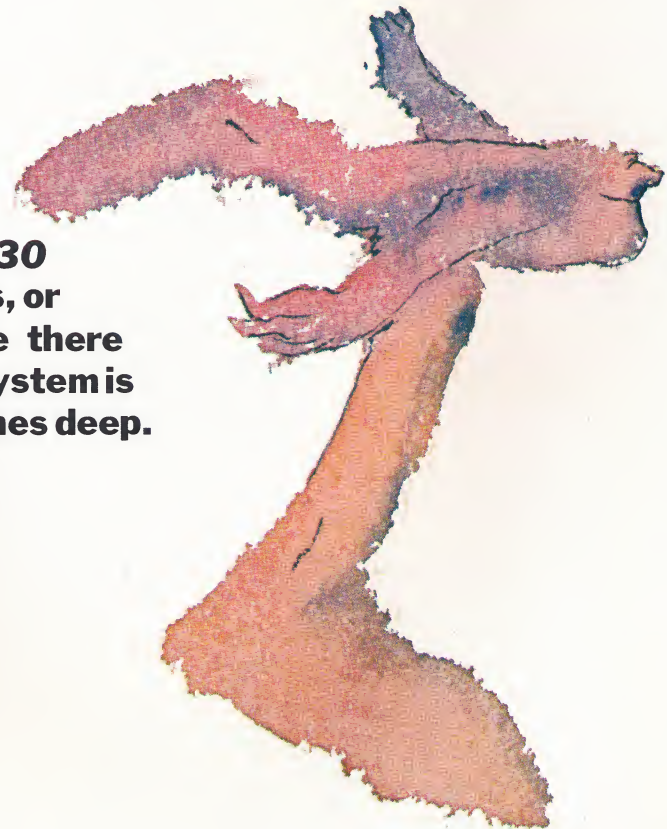
Four on the floor energy blow your mind hood scoop raw bleeding but controlled power, man! That's 10 MHz, and what it means is that since cycle time is a function of power, the CSP-30 is *right there*. Edge City!

THANKS FOR THE MEMORIES

A little here about the combination of two memories. *Gotcha!* Now the integrated circuit memory gives you speed; 512 words, expandable to 2048, basic cycle time 100 nanoseconds. *Of course.* And the core memory gives you economy and storage capacity; 4096 words, expandable to 32,768, full cycle time 900 nanoseconds.

MINICIRCUIT ROAD TO NIRVANA

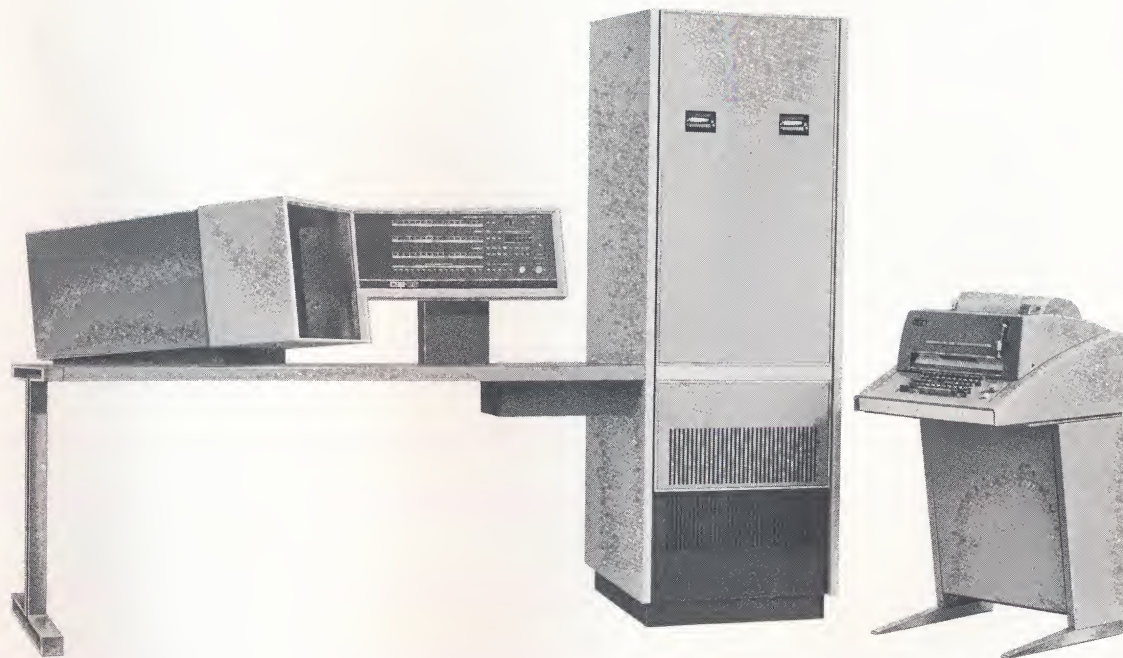
You dug the speed and you dug the power and you dug the price. Now dig this: *The CSP-30 is portable!* Put it on a train, or a boat, or a bus, or a truck and haul it to and from any field site here there and around the world. Size of the whole basic system is just 68 inches high by 21 inches wide by 27 inches deep. And it weighs just 450 no-cal pounds.



THE SOFTWARE BAG

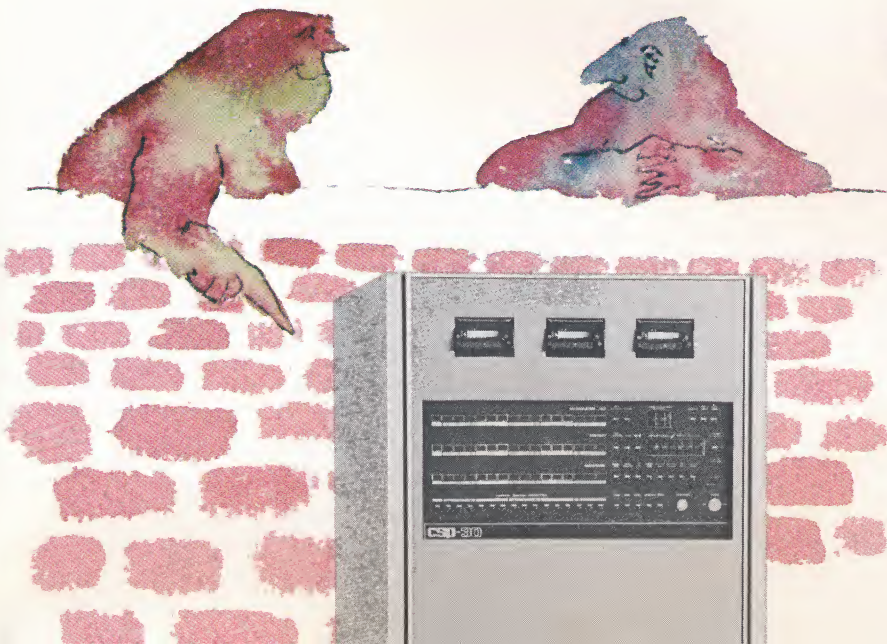
Our fantasy machine comes with a complete package of magical mystery software including all the conventionally required utility programs such as!::: A loader, symbolic test editor, debugging aid, stand-alone symbolic assembler, Fortran symbolic assembler, and a set of standard diagnostic and maintenance programs. So much for utility. *On to function!*

The processing functions accomplished by the CSP-30 (and they are many) are determined completely by software. *And* since each system requires somewhat different detailed handling of the data (it says so in the manual), the software flexibility of the



CSP-30 gives you standard-product economy in spite of system differences. Some of the standard programs and standard program sections available to realize commonly desired functions are:

- Fast Fourier Transform
 - Real-to-Complex and Complex-to-Real FFT
 - Zoom FFT
 - Cepstrum
- Direct Convolution, Cross-Correlation, Auto-Correlation
- Recursive Digital Filtering

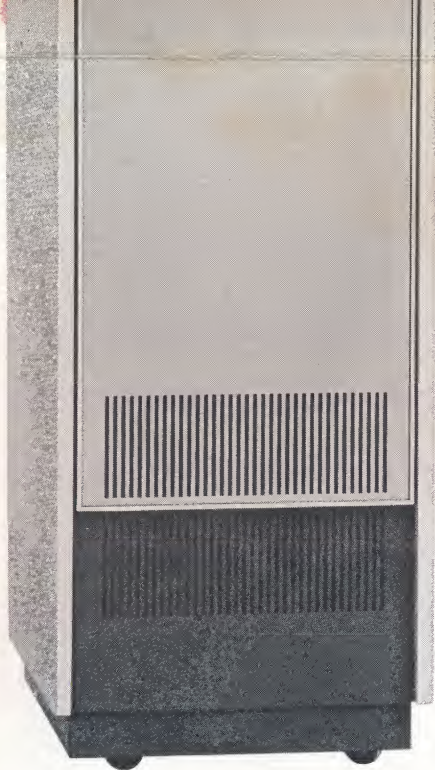


MAKING THE SCENE AND DOING YOUR THING

Some people ***Believe it!*** have already bought a few of our ultimate fantasy machines complete with magical mystery programs and are now happily enjoying euphoric anticipation of unfolding scintillating ultracosmic worlds of scientific endeavor yet to be conquered. **Yes!**

Either you're on the bus or you're not on the bus.

Get on the bus. Fill out the perforated rectangle you observe below and tear off for a mind expanding adventure just over the horizon.



☐ Please send me further information on the CSP-30.

☐ Please call me to arrange a personal meeting.

Name _____

Company _____ Title _____

Street _____

City _____ State _____

Zip _____ Tel. No. _____

LAYING IT ON STRAIGHT



THE COMPLETE BASIC CSP-30 consists of:

- Central Processor
- Magnetic Tape Program Entry Device
- Control Panel
- Power Supply
- KSR 35 Teletypewriter (free-standing).

The optional console version of the CSP-30 has a desk-mounted control panel. All versions are provided with complete utility and function software.

Memories

	IC	CORE
Full cycle time (nsec)	100	900
Access time (nsec)	100	350
Half-cycle time (nsec)	—	600
Transfer rate* (millions of 16-bit words/sec)	10	1
Transfer rate* (millions of 8-bit words/sec)	20	2
Basic memory capacity (words)	512	4,096
Expandable to (words)	2,048	32,768
In blocks of (words)	128	4,096

*Direct memory access to or from external devices.

Instructions

Total basic instructions (includes many operational variations)	291
Single-word instructions	212
Double-word instructions	79
Groups: Arithmetic/Logical	
Skip	
Jump	
Shift	
Pushdown List & Subroutine Calls	
Move/Load/Store	
Input/Output	

Arithmetic & Logical

Parallel operation
Signed 16-bit operands
Fixed-point binary
2's complement form
Multiply and divide: 2-word result mode
Instructions specify operand sources and result destinations

Registers

	Quantity	Length (Bits)	Available*
Accumulator File (quantity includes Index Registers)	32 (14)	16	yes
Operand (A) Register	1	16	yes
Memory Address (IC & Core)	2	16	no
Accumulator File Address	1	5	no
Memory Buffer	1	16	no
Instruction	1	15	no
Program Counter	1	15	no
Intermediate Result Arithmetic (B&C)	2	17	no

*Available to programmer

Input/Output (I/O)

3 parallel, expandable I/O channels for high speed devices or controllers; for data transfer rates over 1 million words/sec
1 I/O channel with 8-device party line controller; includes:
1 address preassigned to magnetic tape program entry
1 address preassigned to I/O Teletypewriter
6 addresses available for assignment
Programmed, single-word I/O data transfers
Programmed sensing of external device status

Priority Interrupts

Initiated externally or by program
Interrupt enable/disable by program
7 interrupt levels are standard:
1 high priority "power threshold"
1 preassigned to control panel switch
4 available for assignment
1 available to all I/O devices
Additional 6-level ports optionally available.

Physical

Vertical rack
Height 68"
Width 21"
Depth 27"
Total system weight (approx.) — 450 lbs.



Arithmetic & Logical

Parallel operation
Signed 16-bit operands
Fixed-point binary
2's complement form
Multiply and divide: 2-word result mode
Instructions specify operand sources and result destinations

Instruction operating times:

Add/subtract	200 nsec
Jump	200 nsec
Multiply	1.0 μ sec
Divide	3.5 μ sec

For instruction modification, add:

Memory reference	100 nsec
Index	100 nsec
Indirect address (per level)	100 nsec

Typical instruction rate: 3 million instructions/sec

Addressing

There are many addressing possibilities, including:

- Direct addressing over the full range of IC and Core memories
- Indexed addressing
- Multi-level indirect addressing

1 available to all I/O devices

Additional 6-level ports optionally available.

Physical

Vertical rack

Height	68"
Width	21"
Depth	27"

Total system weight (approx.) — 450 lbs.

Power — 20 amps, 115 VAC $\pm$ 10%, 60 Hz

Environment 0°C to 50°C; 20 % to 90% relative humidity; no special air conditioning or sub-flooring required.

Software

Loader

Symbolic text editor

Debugging aid

Stand-alone symbolic assembler

Diagnostic and maintenance programs

Fast Fourier transform programs

Cooley-Tukey (decimation in time)

Sande-Tukey (decimation in frequency)

Radix - 2

Radix - 4

Mixed radix

Real-to-complex FFT

Complex-to-real FFT

Zoom FFT

Complex product

Cepstrum

Direct convolution, cross-correlation, auto-correlation

Recursive digital filtering

First order

Second order

Ensemble average

Amplitude histogram

COMPUTER SIGNAL PROCESSORS, INC.

209 Middlesex Turnpike
Burlington, Mass. 01803

FIRST CLASS
PERMIT NO.
41869
BOSTON, MASS.

BUSINESS REPLY MAIL

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